

Zheyuan Xu (Charles Xu)

Introduction

Aspiring computer engineer and inventor looking for summer 2021 internship. My interest includes robotics, AR/VR, reinforcement learning, autonomous driving and autonomous systems

Education

University of Washington

MS in Computer Science

Fall 2020 Onwards

Georgia Institute of Technology

BS in Electrical Engineering

Fall 2015-Spring 2020

BS in Computer Science

Spring 2016-Spring 2020

Invention (co-inventor)

Ultra-lightweight Low Latency Flight Control System

- *A low-power, low-latency, lightweight headless flight control system suite for indoor robotics systems.*
 - Co-inventor, Firmware and System Development
 - Improved the bi-directional communication, lowered latency by more than 150 times
 - Potentially the world's lightest gram level autopilot board (0.49 grams)
 - Link: <https://licensing.research.gatech.edu/technology/flight-control-system-miniature-aerial-robots>

Highly Effective Motion Capture Marker for Small Aerial Robots

- *A robust, lightweight, low-power marker that eliminates the need for external light sources in indoor motion capture systems*
 - Co-inventor, electronics design and testing
 - Link: <https://industry.gatech.edu/technology/highly-effective-motion-capture-marker-small-aerial-robots>

Skills

- Programming: Familiarity with multiple languages including C, C++, Java, Python, C#, Swift, Dart, Matlab
- Platform: Familiarity with mainstream OS (Windows, MacOS and Linux) as well as resource constrained ARM platforms
- Software engineering: Firmware development, mobile app development in MVC/MVVM, desktop app development
- Frameworks: Pytorch, Tensorflow, Flutter
- Toolsets: Github, React, .Net, ARKit, Firebase, MySQL, Azure SQL
- IDE: Visual studio, Keil, Android Studio, Unity, Cadence, Segger Embedded Studio, Xcode, ARkit
- CAD: Eagle CAD, Solidworks

Research Experience

Research Assistant (Georgia Tech System Research Lab)

January 2020–August 2020

- Worked on various autonomous platforms including OSV (omni-directional surface vehicle) as well as GT-MAB (Miniature Aerial Blimp)
- Automated OSV (omni-directional surface vehicle) for underwater fish cage inspection
- Integrated RTK (real-time kinematic) GPS, enabling centimeter-level accuracy in localization and heading measurements

Personal Projects Highlights

AdaEye (winning entry for MakeHarvard)

Feb 2021

- *A third eye for visually impaired to see the surroundings and navigate the space*
 - Frontend runs on cell phone, accepts voice input in real time

- Backend controls camera gimbal, scans surroundings, and sends pictures to Google Cloud Vision
- Frontend read back recognized objects, as well as anything in proximity
- GPT-3 integration for enhanced voice query and answer
- Winner for Best Use of Google Cloud
- <https://devpost.com/software/adaeye>

Neomap (winning entry for MLH New Year Hack)

Jan 2021

- *A mixed reality social media application for sharing new year resolution on mobile platform*
 - Winner for both Google Cloud track and Radar.io track out of 140 projects submitted
 - <https://devpost.com/software/neomap-lnirzu>

VCart (entry for MLH Holiday Hack)

Dec 2020

- *A mixed reality remote shopping experience that can run on your cell phone*
 - Allows users to add items to cart by using hand pose and dragging in front of the camera
 - <https://devpost.com/software/cart-orsh9x>

Lunar Olympics (winning entry for Open Innovation University Hackathon)

Dec 2020

- *Futuristic olympics game hosted on the moon*
 - runs on your cell phone, offering you a mixed reality experience
 - allows user to control the athlete by using external IMU sensor connected to cell phone by Bluetooth low energy (BLE)
 - <https://devpost.com/software/lunar-olympics>

Project Vulture

April 2019

- *4G/LTE controlled autonomous photo-reconnaissance drone based on DJI S500 frame*
 - Combined Raspberry Pi 3B as a coprocessor with Pixhawk flight controller, and Intel Movidius neural compute stick, enabling real-time image recognition
 - Used transfer learning for image recognition(*pre-trained on Caltech101*)
 - Implemented adaptive non-PID control algorithms (still in progress)
 - Test flight: <https://www.youtube.com/watch?v=R1bF3rFWbDY>

GloveBot

November 2018

- *Radio controlled car by gesture command*
 - Built, tested a remotely controlled car based on ARM M3 boards and Xbee RF modules
 - Made a glove with flex sensors which are able to sense different gestures and send the signals to the vehicles
 - https://youtu.be/_XoIus02eTk

Contact Information

- Academic email: cxl014@uw.edu
- personal email: xuzheyuan961124@gmail.com
- Devpost: <https://devpost.com/CharlesXu1014>
- personal website: <https://charlesxu1124.github.io>
- Github: CharlesXu1124

Affiliation

- *IEEE Regional Ambassador*
- *MLH Hacker*